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so-called false hybrids, in which in the second generation the hybrid splits up into the parent forms only. It is easily seen from what follows that this will necessarily be the case when two plants are crossed each of which responds to its own pollen more readily than to that of the other. Cases like this are not infrequent. Referring to the above diagram, we get the hybrid Ab in the first generation by offering to ovules of B pollen of A only. But when the hybrid produces pollen and ovules, both A and B ovules are supplied with both kinds of pollen; hence we get no hybrids in the fertilization of the ovules on the hybrid. That is, $A \times A$ and $B \times B$ give fertile seed and $A \times B$ and $B \times A$ fail because their ovules are supplied with both kinds of pollen and each responds more readily to its own than to that of the other. Instead, therefore, of being an exception to Mendel's law, Millardet's false hybrids fully conform to that law and are explained by it. Correns' proposed explanation of this case (See *Ber. Deutsch. Bot. Gesel.*, April 24, 1901) as a limiting case of a series, which is itself not satisfactorily accounted for, cannot be accepted.

Another case: sometimes a hybrid, instead of showing progeny made up of plants, one fourth of which are like the male parent, one fourth like the female parent, and one half like the hybrid, as is the case under Mendel's law, seems at once to be fixed in type, and produces progeny of its own type only. From what follows it will be seen that this is necessarily the case, if Mendel's law is true, when the two plants are each self-sterile or when each responds to the pollen of the other more readily than to its own, which is not infrequently the case. Referring again to the above diagram illustrating Mendel's law: $A \times A$ fails in this case because A ovules are offered both A and B pollen and they fertilize only with B pollen. Similarly, B ovules are offered both A and B pollen and they fertilize only with A pollen. We get therefore the fertilizations $A \times B$ and $B \times A$, both of which produce only the hybrid. Again we see that Mendel's law offers a perfectly rational explanation of what has been stated as an important ex-

ception to it. In this case I would suggest to those who are in a position to do so that the above explanations, which I present only as hypotheses as yet, may be easily put to test, by taking those cases in which these exceptional hybrids occur and ascertaining whether or not the hypotheses here proposed accord with the facts regarding the relative sterility of the plants towards their own pollen and that of the other party to the cross.

Many other apparently abnormal cases are to be explained on similar grounds; for instance, if one plant is self sterile or responds more readily to pollen of the other plant than to its own, while the other responds with equal readiness to both kinds of pollen, we would have a case like the following (see diagram): $A \times A$ would not occur, because A being offered pollen of both A and B , all the A ovules fertilize with B pollen. $A \times B$ and $B \times B$ will occur as in the diagram. $B \times B$ will constitute one fourth the progeny, while three fourths will consist of the hybrid Ab ; such apparent anomalies are therefore entirely consistent with Mendel's law.

Some time in the near future I shall present another case which seems to be a real exception to this law (Correns' series above referred to) and shall offer an explanation for it and the results of experimental data.

W. J. SPILLMAN.

BUREAU OF PLANT INDUSTRY,
U. S. DEPT. AGRIC.

A REALISTIC DREAM.

THE following statement concerning a remarkably realistic dream was written in the form of a personal letter by Dr. Charles A. White to his friend Mr. Arnold Burges Johnson, of Washington, D. C.

A VISION.

My Dear Friend:

In compliance with your request I herewith send you an account of the visional dream to which I referred in our conversation a few days ago, together with some remarks upon it and upon certain circumstances connected with its occurrence.

During the five years from and after 1859, Rev. Dr. W. H. Barris and I were neighbors at Burlington, Iowa, and, owing to a common interest in geological and paleontological studies, our acquaintance became quite intimate. He frequently called upon me at my home to discuss our latest observations and discoveries, our region having been a remarkably favorable one for those studies. His calls were usually brief; his conversation was generally limited to the subjects referred to and to related topics, and I soon learned to admire him for his comprehensive knowledge, and to love him for his kindly nature. That association was broken by the removal of both of us to other places of residence, he going to the professorship of Greek and Hebrew in Griswold College at Davenport. There, also he continued his scientific studies, became one of the founders of the Davenport Academy of Sciences and, in due time, its president.

Our friendly acquaintance was continued by correspondence but after our separation at Burlington we seldom met. Indeed, so completely were we separated that I did not see him during the last thirty years of his life. I occasionally sent him copies of my publications, the receipt of which he acknowledged by letter, always in an appreciative manner. In 1900 I published two articles in *SCIENCE*, wherein I gave my views as to the proper construction and use of certain scientific terms derived from the Greek, and sent him a copy of each. I got no reply from him on that occasion, and some months afterward a letter from his daughter told me of his death, which occurred at Davenport, Iowa, on June 10, 1901. I was naturally grieved at the loss of my old friend, and, wishing to perpetuate the memory of so good a man, I wrote as appreciative a sketch of his life and character as I was able, and it was published at Des Moines in the *Annals of Iowa* for October, 1901.

Early in that month I received by mail at my home in Washington, D. C., a copy of the magazine containing the sketch and, after re-reading it, I went to my room to take my usual afternoon nap. Upon such occasions I

frequently repeat to myself verses, or parts of poems, which I committed to memory in my youth. The rhythm and cadence have a soothing effect and I soon fall asleep. As I lay thinking of my friend I began repeating to myself Halleck's well-known lines:

Green be the turf above thee,
Friend of my early days.
None knew thee but to love thee
Nor named thee but to praise.

Just as I finished the last line I heard a voice on the further side of an arras near my bed which I recognized as no other than his own. I did not distinguish what he was then saying, but he seemed to me to be speaking to my wife, who had admitted him for a call upon me, just as she had often done in the old days. He then stepped into full view and I observed that he was dressed in his usual black walking suit and that he carried a book under his arm. After giving me a pleasant greeting he said archly, "Don't you think you rather overdid that sketch?" I knew he referred to the one I had written of himself and said quickly, "No, by no means." He replied, "Well I thought some persons might regard it as supererogatory." I said, "How can they? It is all true, and I wrote it in all sincerity." When he saw that I took the matter so seriously he, with his characteristic tact, at once changed the subject and said, "By the bye, I called to speak to you about the two articles you published in *SCIENCE* last year. I read them before I went away and ought to have written you about them, but I neglected it. You were quite right in your strictures upon the misuse of Greek words in the construction of scientific terms. That article was a grand, good thing." I replied, "That is indeed praise from one who taught Greek twenty-five years." "Well, that is what I thought of it," he said. Then, pausing as if he was thinking of something else, he said, "But I must be going," and moved away a little. I called out, "Don't go, Doctor, I have a lot of things I want to say to you." He turned and looked at me and said, "Yes, I must go"; and with a gentle laugh, just an audible smile, he was gone. His going so

agitated me that I rose quickly, fully awake, and so realistic had been my dream that for a time I could hardly believe that I had been asleep. Indeed, I think I had slept only a few moments, because I had not that feeling of lassitude which one has upon awaking from profound sleep. Wishing to preserve a record of such a strange dream I wrote out the foregoing account of it within a few hours after its occurrence.

The few dreams I have are usually of a perplexing and irrational character, and have little relevancy to any of my past or present waking experiences. But this one was visional in form, wholly pleasing, without irrelevant deflection, and entirely rational in character except that it involved an inconspicuous anachronism, the scene of the vision being laid for more than thirty years before the occurrences which formed the subjects of our conversation. That is, the personal appearance of my friend and my apparent surroundings were those of more than thirty years before, and not those of our later years, for he was nearly eighty when he died, we had long dwelt apart and in surroundings unlike those of our earlier years, and his latest photograph, since received, shows that he had a very different appearance in his later years from that which I saw in the visional visitation. But I did not observe that discrepancy then, and the visitation seemed entirely natural and purposeful.

I have always admired the definiteness of your faith and that of our friend H., in the future life, and I can well understand how it is that you are more disposed to regard my vision as an objective, than as a subjective, occurrence. Indeed, the dream was so distinctly visional in character that it is difficult for me to avoid taking the same view of it that you do, for even now the shadowy interview with my reverend friend seems as real to me as any that I ever had with him in the flesh. It was so pleasing that I can only regret that I have not had similar visional interviews with other departed friends, and that others whom he loved have not been thus visited since his departure. I am sure that I take less pleasure in a subjective than an

objective view of my vision, but it is only proper that I should state the facts which favor the former view. I shall do little more than state those facts because I have never made myself familiar with psychic subjects.

When considering this vision subjectively reference must necessarily be made to my own physical and mental condition, but for the purpose of comparison it is necessary first to note the personal characteristics of the one whose shadowy form was the chief figure in it. I have already mentioned a part of them, but so far as they relate to the visional interview they may be summed up as follows: He was of an extremely genial disposition, although his manner in general was that of proper reserve. He was earnest but tactful in conversation and prompt to express approval of what he thought commendable. His usual garb was recognizably clerical, and he often carried a book or a small portfolio under his arm when he came to see me. His calls were often brief and sometimes closed abruptly, but always in a kindly manner. The expressions 'by the bye' and 'a grand, good thing' were habitual with him in conversation. All these characteristics, as well as his personal appearance and distinguishing tones of voice, were clearly brought out in the vision and made it harmonize completely with my distinct recollection of his personality, and of the many real interviews I had with him in those early years. It was really a composite representation of many of those interviews, and not a duplication of any one of them.

As to my own personality with reference to this vision it is perhaps enough to say that I am in good health although I am past the years of active life. My surroundings are congenial, and among my pleasantest memories are those concerning my early friends, most of whom I have outlived. I have written for publication biographical sketches of no less than six of them, but I have never received a visional call from any other than Dr. Barris; and I have never had a similar vision before or since. The sketch of his life before referred to was written while I was keenly sensible of the loss occasioned by his death, and while mentally reviewing his

admirable character, and it was plainly in connection with the state of mind thus induced that the vision occurred. I am, therefore, not surprised that he should have modestly suggested that that I had 'over-done' the sketch, but I could not then, and can not now, admit the correctness of that suggestion. His visional call upon me to acknowledge the receipt of the articles I had sent him was in exact accord with what he would surely have done if we were yet living as neighbors. His commendation of those articles may perhaps be regarded by some persons as a reflection of my own egotism; but I prefer to regard it as a reflection of my foreknowledge of what his opinion would be when he read them, and of his manner of expressing it personally.

Nothing is more common than the appearance of absent and deceased friends in dreams, but noteworthy features of the one here recorded are its coherence, congruity and absence of every unpleasant feature except the disappointment occasioned by the sudden termination of the interview. In these respects it was equal to any that I have ever known or heard of, and even Coleridge's vision of Kubla Khan was not more remarkable in those features. But Coleridge was in ill health when he saw that vision; my health was normal. His sleep and vision were estimated by himself to have been three hours long; mine was so short as to cause me to suspect that it was almost momentary. His vision was wholly fanciful; mine was a counterpart of ordinary interviews which actually occurred long ago. The chief subject of his vision was, in a sense, accidental; the chief subject referred to by my shadowy visitor was precisely that which he would have introduced had he been living. In short, it is the matter-of-fact character of this vision, coupled with the distinctness and long continuance of impressions caused by friendly intercourse that gives to it peculiar interest.

Faithfully yours,

CHARLES A. WHITE.

SMITHSONIAN INSTITUTION,
October 2, 1902.

RECENT ZOOPALEONTOLOGY.

A REMARKABLE NEW MAMMAL FROM JAPAN. ITS
RELATIONSHIP TO THE CALIFORNIAN GENUS
DESMOSTYLUS, MARSH.*

IN a recent number of the *Journal of the College of Science*, Imperial University, Tokyo, S. Yoshiwara and J. Iwasaki give a full and well-illustrated description of a remarkable fossil skull discovered in 1898 in apparently marine beds of Miocene age, in the province of Mino. Photographs and sketches of this skull were sent to the writer of the present notice about a year ago, the authors at the time referring the animal to the Sirenia; it seemed to the writer to present more resemblances to the Proboscidea, and this view is adopted by the authors.

A study of this more complete account of the fossil, and comparison with a supposed fossil Sirenian described by Marsh from California in 1888, under the name *Desmostylus hesperus*, lead to the belief that the reference of this animal at present is somewhat uncertain; it is possibly Proboscidean, it is possibly Sirenian. The possible community of origin of these two orders of ungulates was, in fact, suggested by De Blainville, and has received some support from the recent discoveries of ancient types of Mastodon and Sirenians in Egypt. The authors fully recognize the Sirenian as well as Proboscidean resemblances in this animal, and rightly conclude that these may be primitive characters due to the remote common ancestry of these two orders of ungulates.

Whatever its affinities, this new fossil mammal is certainly most remarkable. The skull is about eighteen inches in length; the upper and lower jaws are greatly produced anteriorly, as in the Proboscidea and Sirenia, the premaxillæ bearing two forwardly directed tusks, while the lower jaw bears two pairs of tusks—a larger outer incisor and a smaller median incisor. These tusks point forward, and are completely invested with enamel. The enamel is also extremely thick upon the grind-

* 'Notes on a New Fossil Mammal,' by S. Yoshiwara and J. Iwasaki, *Jour. of the Coll. of Science*, Imperial Univ. of Tokyo, Vol. XVI, Art. 6, 1902.